DOCUMENT RESUME

ED 224 672 RC 013 727

AUTHOR Williams, Richard; And Others
TITLE [Science and Self-Determination Upward Bound National Demonstration Project. Report and Evaluation, First Cycle].
SPONS AGENCY Department of Education, Washington, DC.
PUB DATE Dec 81
NOTE 37p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Achievement; *American Indian Education; *Career Awareness; College Preparation; College School Cooperation; Counseling; Cultural Enrichment; Demonstration Programs; *Experiential Learning; Higher Education; High Schools; Learning Modules; *Mathematics Instruction; *Science Instruction; Secondary School Students; *Self Determination; Student Motivation; Summer Science Programs; Technical Occupations; Transitional Programs
IDENTIFIERS *Upward Bound

ABSTRACT

Upward Bound's National Demonstration Project "Science and Self-Determination" (SSD) awarded to the American Indian Educational Opportunity Program at University of Colorado, Boulder, in 1980 shares a common purpose with other Upward Bound Projects: to provide opportunity to low income and otherwise disadvantaged secondary students to attend post-secondary institutions. The overall goal of such projects is to increase academic performance and motivational levels among participating students during their formative high school years. The SSD project involves two related but distinct components: a Summer Institute and an Academic Year Program. The Summer Institute design is based on academic skills improvement in an intensive developmental curriculum structure including experiential learning modules. It also incorporates an in-depth counseling program, cultural enrichment aspects, and unique motivational tools. The Academic Year Program, lodged within the students' respective home schools, provides access to tutors, counseling, and advanced math/science curriculum with an Indian orientation. Project funding mandates service delivery to 75 students from 15 target schools in 8 states. This breakout impacts more than 20 reservations and at least 22 distinct tribal groups.
(Author/AH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED224672

JUN 1982
RECEIVED
ERIC/CRESS

REPORT AND EVALUATION

(First Cycle)

Submitted by: The Science and Self-Determination Upward Bound National Demonstration Project, American Indian Educational Opportunity Program, University of Colorado/ Boulder.

Richard Williams, Director
December, 1981

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Ward Churchill

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

RC 013227

CONTENTS

Page

Map of Target School Locations.....i
Key to Map.....ii
Introduction.....1
The Components.....2-7
The Academic Year Program.....2-3
The Summer Institute.....3-4
Summer Institute Staffing.....4-5
Experiential Learning Modules.....5
Student Activities.....5-6
Target Schools.....6-7
Student Selection.....7
Short-Term Objectives.....7-12
Student Recruitment and Selection.....7
Student Needs Assessment.....7-8
Program Implementation.....8-12
Academic.....8-9
Chart on Writing Attainment.....9
Counseling.....10
Student Services.....10-11
Program Evaluation.....11-12
Program Development.....12
Long-Term Objectives.....13
Evaluation.....14-17
Design.....14-16
Chart on Reading Attainment.....14
Chart on Science Attainment.....15
Chart on Math Attainment.....15
Student Records.....16
Staff Evaluation.....16-17
Retention.....17-18
Chart on Student Retention.....18
Fiscal Problems.....19

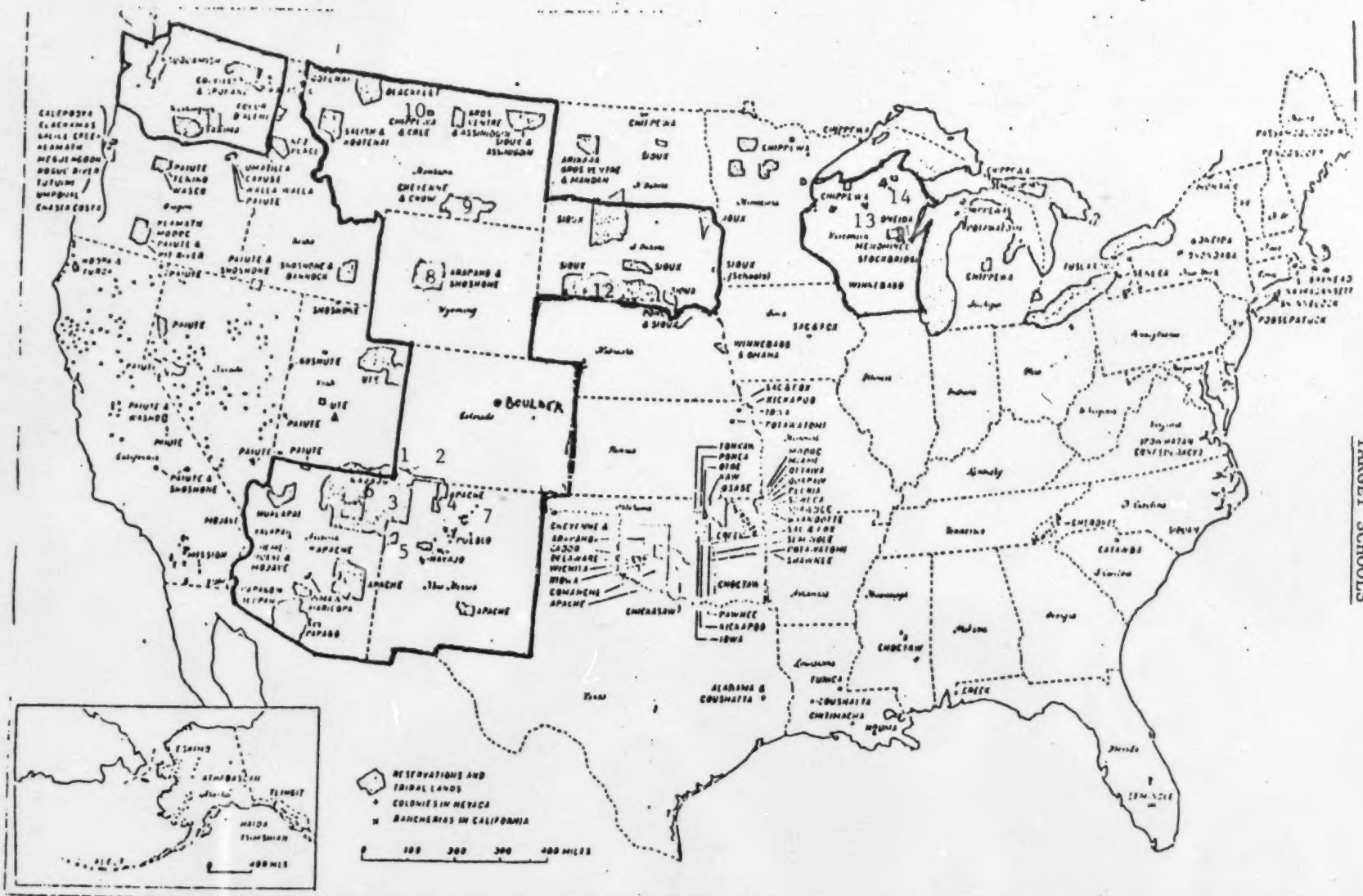
Recommendations.....19-20
Conclusion.....20

APPENDIX I: Science and Self-Determination: Advisory Board Members.
APPENDIX II: Pre/Post-Test Results: by Student.
APPENDIX III: Student Mailing List: 1st Cycle.

KEY TO MAP

1) Montezuma-Cortez High School
2) Ignacio High School
3) Tohatchi High School
4) Dulce High School
5) Ramah-Pine Hill School
6) Rock Point Community School
7) Santa Fe Indian School
8) Wyoming Indian High School
9) Labre Indian School
10) Rocky Boy Tribal School
11) Yakima Nation High School
12) Little Wound High School
13) Oneida Tribal Schools
14) Lakeland Union High School

Note: All target schools designated on this map remain active during second cycle activities. A fifteenth target school will be added during second cycle operations.



MAP II PRESENT DAY LOCATION OF INDIAN TRIBES

As is readily observable by comparison of this map to the map concerning Project Scope by Group/Location, this project deals directly with the area(s) where the bulk of Native Americans are located nationally. This is also the area of greatest concentration of natural resources.

TARGET SCHOOLS

BEST COPY AVAILABLE

Introduction

The Upward Bound National Demonstration Project "Science and Self-Determination" (SSD) awarded to the American Indian Educational Opportunity Program (AI-EOP) at the University of Colorado, Boulder in 1980 shares a common purpose with other Upward Bound Projects: to provide opportunity to low income and otherwise disadvantaged secondary students to attend post-secondary institutions. The overall goal of such projects is to increase academic performance and motivational level(s) among participating students during their formative high school years.

This project is located at the University of Colorado's Boulder campus, a facility with an institutional enrollment of approximately 21,500 students during the academic year and some 8,000 during summer sessions.

The "National Demonstration" designation was bestowed upon the project due to the composition of the target population (requiring a multi-state recruitment model) and uniqueness of its program design. This design incorporates a plan to increase proficiencies in math and science related academic areas with an emphasis upon increasing involvement of Native Americans with career options in technical fields.

In its approved configuration, the SSD project involves two related but distinct components: a Summer Institute and an Academic Year Program. The Summer Institute design is based on academic skills improvement in a intensive developmental curriculum structure including experiential learning modules. It also incorporates an in-depth counseling program, cultural enrichment aspects, and unique motivational tools. The Academic Year Program, lodged within the students' respective home schools, provides access to tutors, counseling, and advanced math/science curriculum with an Indian orientation.

The project's funding charter mandated service delivery to seventy-five (75) students from fifteen (15) target schools in eight (8) states. This breakout impacts more than twenty (20) reservations and at least twenty-two (22) distinct tribal groups.

The Components

The Academic Year Program:

The Academic Year Program of the SSD Project incorporates tutoring, counseling and formal academics as priority matters. Indian oriented curriculum is utilized to improve student interest and self-image. Academic work includes advanced curriculum and materials which tends to supplant that normally offered within the various target schools. Overall, the component is directed and coordinated from the project office in Boulder through direct liason with "Home School Coordinators" retained in each of the fifteen target locations. Each school coordinator provides direct service delivery to his/her participating student population (an average of five [5] per school).

Along with the priority matters denoted above, Home School Coordinators provide such services as administering standardized testing instruments (ACT/SAT), offering career goal advising and assistance in applying to post-secondary institutions.

Counseling per se involves the following overlapping areas of concern: academic advising and counseling, career counseling, personal counseling, cultural reinforcement and -- as needed -- crisis intervention. Tutoring within the home schools is, ofcourse, a related matter and is either performed or coordinated by the Home School Coordinator. The same holds for teaching.

Home School Coordinators represent the single most vital link between participating students, home school professional staff, parents and other community members, and the SSD Project staff. In effect they are the glue which cements the Academic Year Program together. Not the least important of reasons for this is that each of these individuals must be able to tailor a service delivery package to the specific needs of his/her clientele, both personally and culturally. Hence, styles of delivery tend to vary from place to place and this is encouraged by the staff at CU.

Insofar as this component is now underway in its first operational cycle, in-depth report and evaluation of its relative success is

impossible. Updates shall be provided as fundamental data concerning results becomes available over the next six (6) months.

The Summer Institute:

The emphasis of the Summer Institute component is to provide intensive developmental instruction in the "core" academic areas of pre-collegiate mathematics, science, reading comprehension and expository writing. Within each of these critical areas, participating students' relative strengths/weaknesses are prediagnosed through administration of diagnostic testing instruments at their respective home schools. Results are forwarded to CU/Boulder during the spring, a period of intensive institute planning wherein curriculum is specifically "tuned" to meeting known student needs.

In essence, the math curriculum is designed to provide adequate student preperation for and orientation towards college algebra. In many instances, this entails refining high school general math and pre-algebra skills in individual students as a prerequisite to successful completion of high school algebra during the subsequent academic cycle. In other instances students actually progress into collegiate algebra during the Institute itself.

The science curriculum incorporates the study of the ecological disciplines as the basis for elaboration. Included are daily field trips affording direct interaction(s) with a variety of ecosystemic settings. This is counterpointed by classroom and labratory work. The functional objective in this connection relates more to the transference of the principals of scientific methodologies to students (while retaining a concrete linkage to culturally familiar processes) than to emparting specific scientific data.

Expository writing is primarily devoted to exercizes designed to assist students in achieving the degree of writing competence necessary to assure success in initial collegiate work. In this regard, a good deal of the "product" orientation centers upon technical, science-related material. Hence, the writing curriculum may be viewed as something of an adjunct to the science curriculum.

Reading comprehension does not exist as a formally distint curriculum entity. Rather, it is integrated into both the science and expository writing aspects of the Summer Institute. Predictably, one result of this procedure is that reading materials tend to relate quite heavily to the sciences and, again, this may be viewed as a means to enhance the overall science education efforts at issue. As with writing, the ultimate goal of SSD reading development efforts is to inculcate a degree of proficiency in each student adequate to meeting the demands of first year college work.

Aside from curriculum, the Summer Institute possesses a number of enhancing characteristics through which a balanced student development is facilitated. For example, all students participate in post-secondary education orientational activities such as visits to several university departments. AI-EOP collegiate counselors also provide group and individuated presentations to students on matters such as financial aids information, admission requirements, etc.

To increase motivation with individual students, associative learning comparisons were utilized which were unique and provided means for students to become more directly involved in the educational process. For instance, students were engaged in a field trip involving five (5) to eight (8) mile hikes over mountain terrain with 3,000 to 5,000 foot altitute increases. While the direct purpose of this strenuous activity was "hands on" exposure to the effects of glaciation, visitation of an active glacier, and observation of high altitude flora, the indirect benefits which accrued concerned development of individual student commitment to the educational process at hand, group building and a sense of overall personal accomplishment.

Summer Institute Staffing:

The SSD Project Summer Institute staff consisted of four (4) teachers (correlated to the core curriculum areas), eight (8) student assistants (tutors, teaching assistants and peer counselors) and four (4) dorm counselors in addition to the permanent staff of director, counselor and secretary.

On balance, staffing proved adequate in this configuration although it is anticipated that at least two (2) dorm counselors will be added to the roster during second cycle activities. The functional responsabilities of the permanent counselor shall also be revised to reflect the experience gained during the first Summer Institute. It has also been determined as advisable that summer staff not go through orientation/training sequences en mass.

Experiential Learning Modules:

One of the most significant aspects of the Summer Institute design was the utilization of experiential learning modules on a day-to-day basis. Through extensive field trips and other mechanisms, participating students are afforded unique opportunities to apprehend the applied potential of various technical/scientific avocations.

Such interaction with industry, various governmental agencies and research and development organizations offers an extremely effective amalgumation of educational enhancement and career orientation in the most practical way. This is especially true insofar as the preponderance of students come from non-dominent (eg: American Indian) cultural backgrounds and rural (eg: reservation) settings which are notably devoid of high tech enterprises. In many cases, the experiential learning opportunities offered within the Summer Institute context were the first chance students had to gain any sort of real awareness along such lines.

The long term impact of such bicultural association upon participating student cannot be diminished in importance. Only through such awareness can students hope to successfully compete in scientific curricula at the college level.

Student Activities:

Aside from the educational specific activities covered above, SSD Summer Institute students were continuously involved in a wide range of activities designed to enhance their "survival skills" in dealing with the essentially alien environment represented by major campuses and urban

areas. For example: a "Bus-a-Thon" was conducted in order to demonstrate the use of modern mass transit systems to rurally oriented students. Similarly, lectures and workshops were presented from a variety of sources concerning matters such as consumer banking, the contemporary use of the criminal justice system (rights vs obligations), etc.

Such efforts are viewed as being completely in line with the notion, integral to the approved version of the SSD Project, the ability to survive in day to day life matters in the campus environment is a concommitant to future academic success among the target student group.

Target Schools:

The fifteen (15) target schools associated with the SSD Project may be broken into two (2) distinct groups. The first group includes public schools which enroll significant numbers of American Indian students. These may be viewed as operating under an essentially Euro-American educational philosophy. The second group is comprized of Indian-controlled schools, enrolling a preponderance of Indian students, and operating under what may be loosely construed as Native American educational philosophies.

By utilizing these two (2) control groups, it is a three (3) year objective of the Project to determine whether there is any discernibly different success rate associated with either learning approach.

The public schools involved are:

1) Oneida Tribal Schools, Oneida, Wisconsin.
2) Ignacio High School, Ignacio, Colorado.
3) Lakeland Union High School, Minocqua, Wisconsin.
4) Dulce High School. Dulce, New Mexico.
5) Montezuma-Cortez High School, Cortez, Colorado.
6) Tohatchi High School, Tohatchi, New Mexico.
7) Wyoming Indian High School, Ethete, Wyoming.

The Indian controlled schools involved are:

1) Santa Fe Indian School, Santa Fe, New Mexico.
2) Ramah-Pine Hill School, Pine Hill, New Mexico.
3) Little Wound High School, Kyle, South Dakota.

4) Rocky Boy Tribal High School, Box Elder, Montana.

5) Rock Point Community School, Chinle, Arizona.

6) Labre Indian School, Ashland, Montana.

7) Yakima Nation High School, Toppenish, Washington.

Due to late project start up during first cycle, as well as other factors, a fifteenth school did not participate. It will be replaced during second cycle operations.

Student Selection:

Home School Coordinators in each target school identified students considered appropriate for SSD participation at the local level. Lists of such students were submitted to the SSD office in Boulder. Selection was made by committee (including representation from the SSD staff, AI-EOP staff, and SSD Advisory Board), based upon a combination of criteria: individual student grade point average, year in school, geographic/tribal distribution, family income profile, and recommendations from faculty, counselors and community leaders, as well as a brief essay written by the student. Each student in contention was rated on a numerical scale; the top seventy-five (75) candidates were then selected with only minor adjustments made in order to achieve relative balance in terms of representation by sex and tribal origin.

Short-Term Objectives

The following is a summary of short-term objectives identified in the approved SSD proposal. After each objective listed, there is a brief statement concerning the degree to which the objective was satisfied.

I. Student Recruitment and Selection: Identification of 75 students from the various target schools appropriate to participate in SSD.

Objective satisfied 100%.

II. Student Needs Assessment: Develop a program of systematic diagnosis utilizing both standardized tests and informal assessment(s) to effectively identify student academic strengths/weaknesses, as well as the preferred learning style of each student.

Each student was pretested. Transcripts were analyzed to provide additional individuated information. Home School Coordinators and other Local Educational Agency (LEA) personnel were interviewed to provide learning style background. Composit needs assessment forms are on file for each student. Objective satisfied 100%.

III. Program Implementation (Summer Institute):

A. Academic: Develop coordinated instructional and supplimental packets relative to each participating student, based upon prediagnosed needs and learning styles.

Objective satisfied 100%.

B. Academic: Raise measurable reading level of all participating students currently testing below the 40th percentile by a minimum of 15 percentile points as measured by The Stanford Diagnostic Reading Test.

Objective not satisfied. Of the 22 students entering the first cycle Summer Institute who pretested at less than the 40th percentile, five (5) met the 15 percentile goal. Eleven (11) students demonstrated a measurable increase ofrom 1 to 10 percebtile points, and six (6) demonstrated a minimal decline.

C. Academic: Develop basic competencies requisite to undertaking prepratory collegiate mathematics in 70-80% of participating students.

Satisfaction of objective undetermined. Insufficient data is currently available from target schools to provide conclusive results in this connection. Preliminary data, based upon Summer Institute exit testing, indicates that 54% of juniors (the appropriate sample) fall within this group. Complete information will be provided in report updates over the next six (6) months.

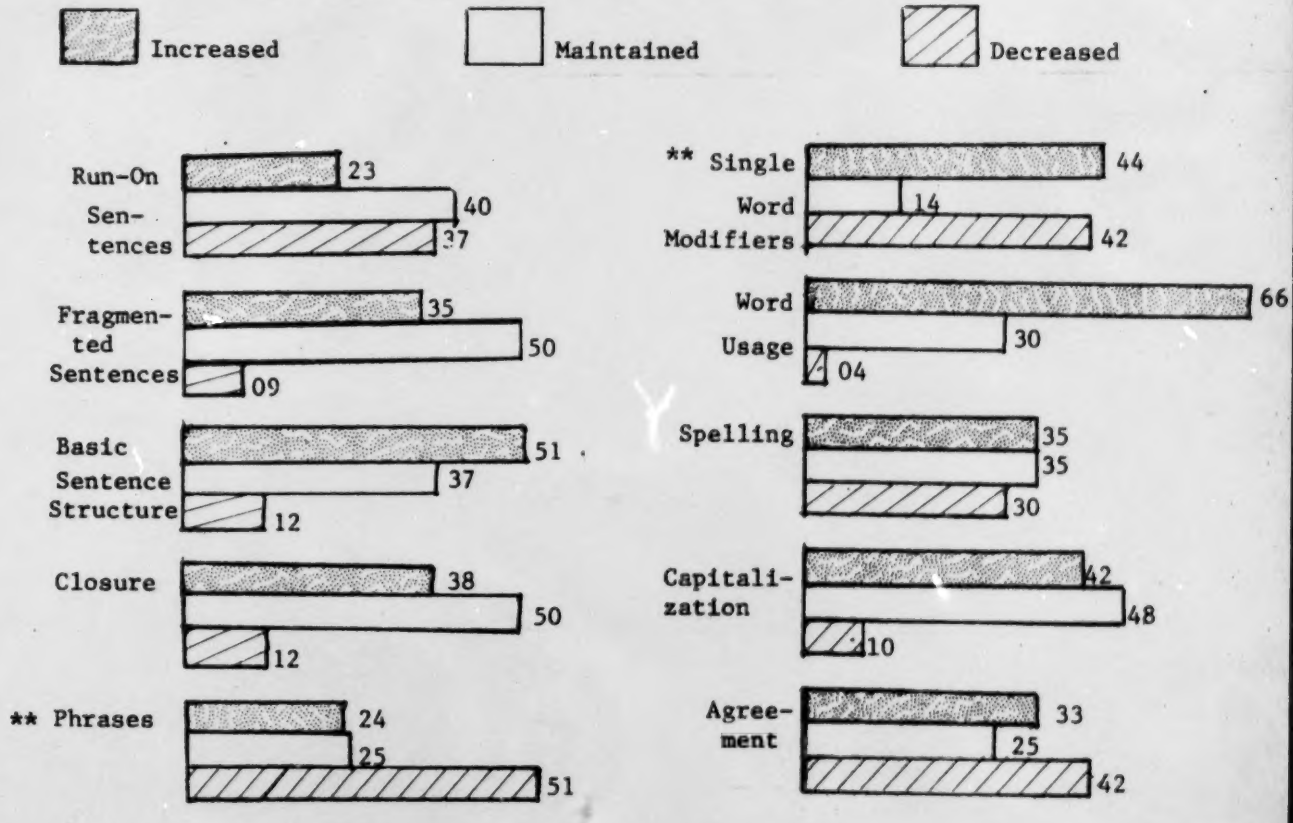
D. Academic: Develop college entry adequacy in participating student writing skills.

Satisfaction of objective undetermined. Insufficient data is again currently unavailable from target schools to provide conclusive results. Preliminary data, as illustrated in Table I (below), indicates that uniform gains were attained relative to expository writing (the focus of Summer Institute writing instruction), but that these were offset, to a certain extent by declines in other areas of writing skills (eg: phrases,

single word modifiers, etc.). Again, comprehensive information will be provided in report updates over the next six months.

TABLE I

Writing Scores Comparison by % of Students



** [A decrease in this area is expected when technical writing skills are taught]

E. Counseling: Provide academic and career counseling to each student at the Summer Institute and in each subsequent secondary academic year.

Objective not entirely satisfied. Each student was afforded intensive counseling in these areas in both group and individuated formats during the institute itself. Such services were inhanced through computerized career option scenarios supplied by the State of Colorado's Employment Service COSIS computer system. However, insofar as no participating student has yet graduated from high school, the overall followup aspect of this objective cannot be said to be satisfied.

F. Counseling: Provide personal an social counseling to assist students in dealing with internal/external impediments to academic success in the sciences.

All students received extensive counseling in this connection during the Summer Institute. Insofar as the greatest single common denominator discovered along these lines was homesickness, and this was addressed effectivelu, this objective can be reasonably said to be 100% satisfied.

G. Counseling: Orient each student to the policies and services of the Summer Institute as well as the broader matrix of those afforded by the University and surrounding community.

Objective 100% satisfied.

H. Counseling: Retain the maximum possible number of entering students throughout the duration of the Summer Institute.

Final retention among all Summer Institute students was 84%. Of the students who left, 9% left for personal reasons (including 3 verified instances of the death of a close family member) and 7% were sent home due to disciplinary problems. Objective 100% satisfied.

I. Student Services: Provide each participating student with a Summer Institute living situation conducive to academic and personal growth.

The Summer Institute provided students with the opportunity to experience dormatory life under controlled circumstances at an early age. All meals provided were nutritional and attractive. Objective satisfied 100%.

J. Student Services: Facilitate use of campus-wide utilization of resources and services available to students.

All students made use (with varying degrees of frequency) of campus facilities such as the library, recreation center and University Memorial Center. Objective satisfied 100%.

K. Student Services: Develop a comprehensive social and cultural program.

All students participated in a bicultural program during the Summer Institute. The students collectively sponsored a pow-wow on campus and open to the public as a portion of their Institute "wrap-up" activities. Objective satisfied 100%.

L. Student Services: Place at least 60% of all SSD students in post-secondary educational institutions; 50% of these at the University of Colorado/Boulder.

Objective undetermined. There has as yet been no graduation from high school among SSD students. Preliminary indications among graduating seniors, however, are extremely encouraging.

M. Program Evaluation: Measure progress toward both long and short term objectives by other than subjective criteria.

Objective partially satisfied. This is an ongoing process. A variety of evaluative instruments are currently employed to measure program success, as is reflected in this evaluative report. More will be adopted as they emerge. Some will no doubt be replaced by better tools of measurement. A 50% satisfaction, however, seems quite reasonable.

N. Program Evaluation: Identify variables which effect achievement among the student target population.

Objective partially satisfied. While SSD has identified (and acted upon) certain variables, others can be defined only through longitudinal study. Hence, the process shall be ongoing throughout the duration of the project. A 33% satisfaction seems appropriate.

O. Program Evaluation: Define strategies for improvement of target population academic performance resultant to evaluative efforts.

Second cycle Summer Institute curriculum is currently being modified and, in some aspects, restructured in accordance with information gleaned from evaluation of first cycle activities. Insofar as the academic year component is currently in process, it would seem premature to assess

effectiveness in this connection. As concerns the Summer Institute, the objective is satisfied 100%.

P. Program Evaluation: Establish adequate book-keeping system to allow for documentation of services provided as well as facilitate necessary longitudinal studies.

Objective satisfied 100%.

Q. Program Development: Develop parental/community support for student participation in the SSD project. Solicit parental/community input in determining program direction.

Students, parents and community members in each target school location were met with directly by SSD staff members during spring semester, 1981. Permanent liasons have been established in each case. A National Advisory Board has also been established to assist in determination of project direction (see Appindix I). Objective satisfied 100%.

R. Program Development: Establish open communications with target LEAs as well as appropriate community organizations/agencies.

Ongoing contacts have been established at each target school as well as with Title IV-A Projects, and local school boards. In most instances, these entities have assumed a posture of active support to the SSD Project. Objective satisfied 100%.

S. Program Development: Provide orientation and in-service training to SSD staff members to facilitate increased technical proficiency, expanded awareness of developments and trends in Indian education nationally, and continually increasing sensitivity to the variety of cultures represented by participating SSD students.

Permanent SSD staff members receive ongoing in-service training in each of the areas denoted. This includes audit coursework, workshops provided by both internal and external consultants and interchange during site visits to target locales. Temporary (summer) staff receive similar instruction, albeit in abbreviated form. Objective satisfied 100%.

T. Program Development: Secure the resources necessary to underwrite the SSD Project on a long-term basis.

Objective undetermined. A number of corporations and foundations have been and are being approached. Premature to assess effectiveness.

Long-Term Objectives (Five Years)

The following is a summary of long-term objectives identified in the approved SSD proposal. After each objective is listed, there is a brief statement concerning steps undertaken toward satisfaction.

I. Retain a minimum of 75% of each Summer Institute class through high school graduation.

Given that this is the first post Summer Institute cycle, it is entirely premature to attempt assessment. It may be noted, however, that, to date, no participating student has dropped out of school.

II. Establish a pattern of cooperation and exchange between tribes and LEAs to improve the quality of instruction received by Native American students at all grade levels.

Through our Home School Coordinators and SSD staff site visits, we have established and/or reinforced dialogue and processes among tribal education committees, LEA staffs and parents/community members in each target school location which seem destined to lead to the desired results. The current stage of development is primarily communicative. During second cycle operations, we are moving into design functions. During the third cycle, implentation of a variety of locally based efforts will begin. Hence, the process is moving in accordance to plan.

III. Articulate the goals and methods of the SSD model for purposes of broad replication within the secondary and post-secondary educational communities.

Articles have appeared in Minority Notes (CU/Boulder), Indian Times (Denver), The Multicultural Counselor's Handbook (Colorado State Department of Education), American Indian Issues in Higher Education (UCLA), the Rocky Mountain News (Denver) and Denver Post (Denver), to date. Additional publications are currently in process, including the preparation of an anthology compilation tentatively entitled Science and Self-Determination: New Strategies in Native American Secondary Science Education, to be published through arrangement with the Council of Energy Resource Tribes.

Evaluation

I. Design: A research design has been formulated and implemented to gather data from both target schools and participating students. As was noted earlier, a comparative longitudinal study is underway to determine relative success-rate differentials between the two (2) generic types of institutions (public and Indian controlled) incorporated into the project.

Student pre and post-test results are compiled and will be cross-tabulated to academic year performance, both by GPA and by the nature of courses undertaken. Grassroots evaluation by home school teachers, counselors, parents and concerned community members will be incorporated, beginning with the end of the current academic year.

As was the case with the measurement of writing skills attainment(s) accruing through the first Summer Institute (illustrated in Table I, Page 9 of this Report/Evaluation), current results are tentative in nature. However, the immediate impact of the first summer's activities in the remaining three (3) curriculum areas may be illustrated as follows:

TABLE II

Reading Scores by Number of Students

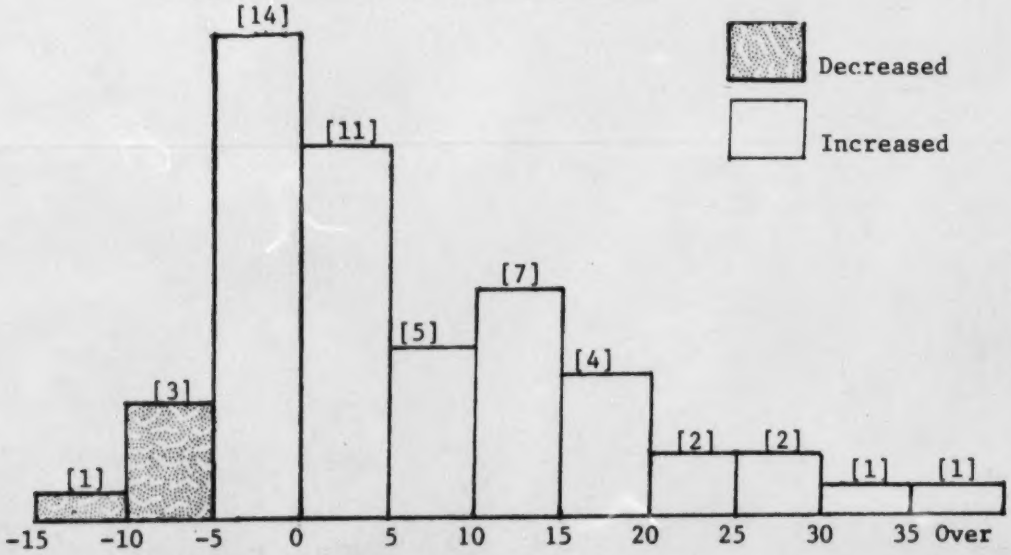
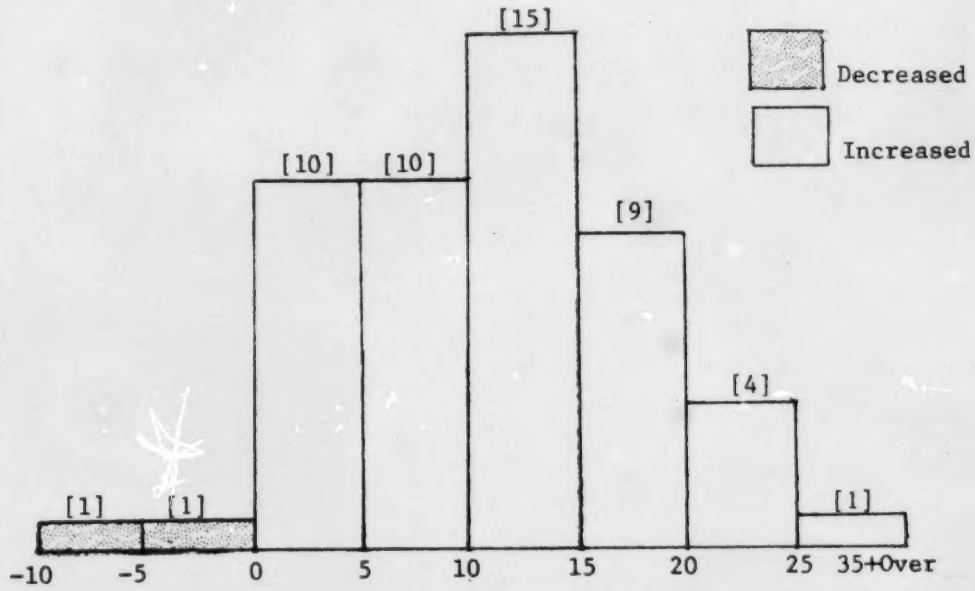


TABLE III

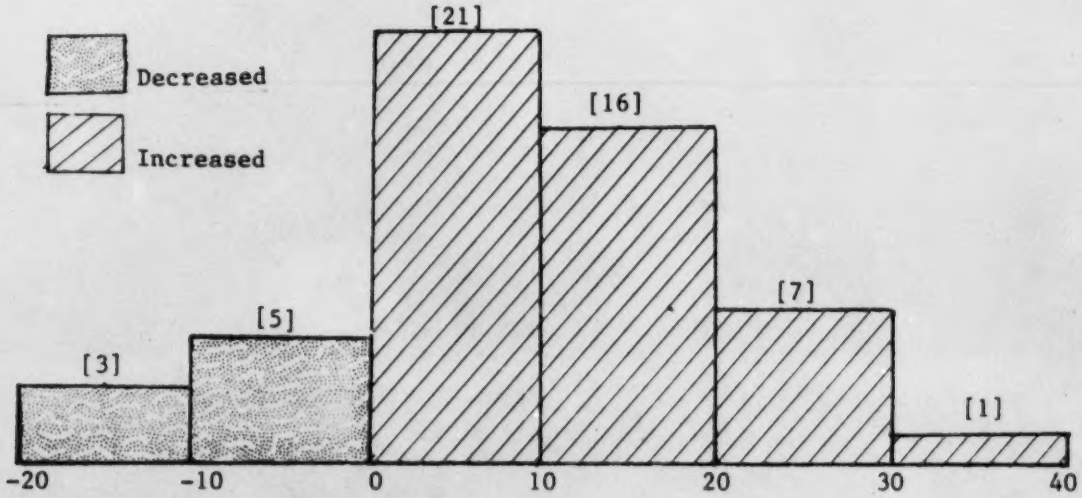
Science Scores by Number of Students



Note: Bottom numbers indicate measured improvement/regression scores.

TABLE IV

Math Scores by Number of Students



As is indicated in the tables, the average increase in measurable reading skills was 7.1 percentile points during the Summer Institute. Such a score indicates an average 14.2% increase as measured against high school sequencing. In math, the average increase in skills attainment during the same period was 9 percentile points. This reflects an actual increase, against high school sequencing, of 17.8% average.

In addition to the preceeding information, the current filed records concerning each participating student contains the following information (at a minimum):

1) An SSD Application Form.
2) Current High School Transcripts and Records.
3) An SSD Admission Essay.
4) Educational Goals Profile.
5) An SSD Needs Assessment.
6) Pre and Post-Test Data (Raw).
7) Support Service History Profile.
8) Notes on Individuated Counseling Sessions (SSD).
9) All Letters of Recommendation.

This information shall be correlated with the other data to be utilized in overall evaluative efforts to provide both immediate results reports such as this one and longitudinal study reporting. All information is applicatable to both individuated and group study techniques/reports.

Please see Appendix II for individual student pre/post-test break outs pursuant to first cycle Summer Institute activities.

II. Staff Evaluation: All summer SSD employees were required to provide evaluation of permanent staff member performance. The results of this evaluation were not remarkable. In essence, the results were (by concensus) that:

1) The roles of summer support counselors need further clarification/definition, and that it is rightly the role of the permanent staff counselor to provide same.

2) Further sharpening of the qualifications for participating students would be helpful, and that it is rightly the role of the composite permanent staff to provide this.

3) The academic expectations placed upon participating students within the six week institute context can be raised even beyond the level(s) initially established. It is the role of the SSD director to facilitate this in a realistic fashion.

All three (3) points are currently being addressed.

Additionally, all summer staff expressed a high degree of confidence in the project. All faculty indicated they would be quite willing to undertake their respective positions during second cycle activities, barring unforeseen circumstances emerging during the ten (10) month interval between summer Institutes. The prospectus among student assistants was more mixed, as was to be anticipated (many will no longer be in the Boulder area during second cycle activities).

Retention

As has been noted, the SSD project was approved and funded to provide service delivery to seventy-five (75) selected students. The first Summer Institute commenced with sixty-seven (67) students on site, present and accounted for. The reasons given among the eight (8) "no shows" varied considerably:

1) One (1) student was lodged in a clinic in Rapid City, SD, immediately prior to the beginning of formal activities.

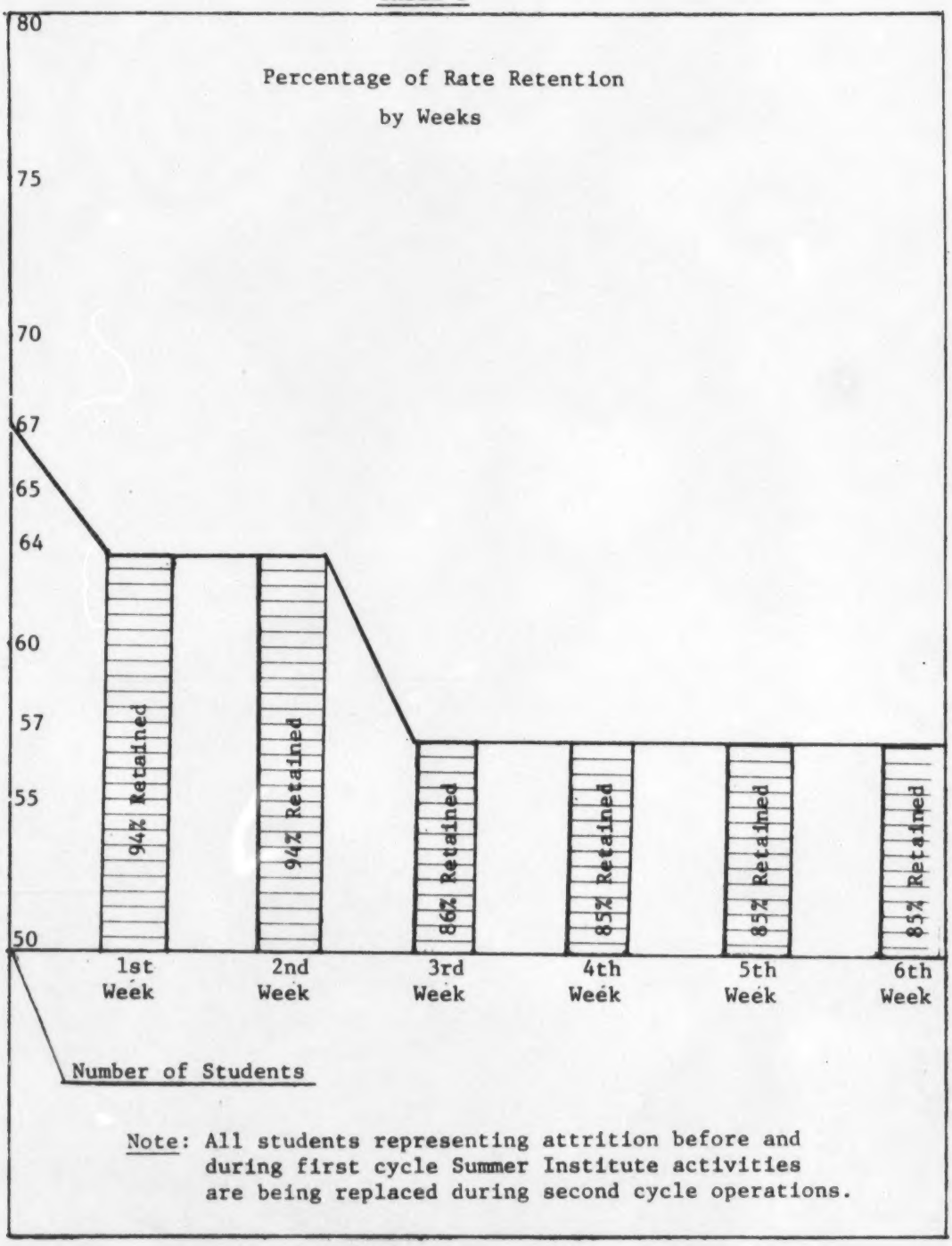
2) One (1) student had experienced the death of her mother during the week preceeding the beginning of formal activities, and was therefore needed at home during the period of the Institute.

3) Four (4) students were withdrawn by parents/themselves due to a need to generate additional family income during the summer months.

4) Two (2) students cited "lack of appropriate attire" as being the reason they opted out at the last moment.

Of the students who did arrive and begin the Institute, three (3) were expelled and sent home for disciplinary reasons during the initial week of activities. None left during the second week. During the third week, seven (7) students exited: six (6) for personal reasons including two (2) deaths in the family. None left thereafter. Table IV (next page) illustrates first year Summer Institute rentention characteristics:

TABLE 5



Note: All students representing attrition before and during first cycle Summer Institute activities are being replaced during second cycle operations.

Fiscal Problems

A variety of fiscal problems confronted the SSD Project during its initial year of operation. A number of these were unique either to SSD, to National Demonstration Projects, or both. The waiver of 50 mile radius criteria created a number of contingencies -- such as the need for student travel support for purposes of funeral leave -- which are at variance with standard EDGAR regulations. Insofar as these problems related overwhelmingly to accounting and interpretation considerations, the preponderance have now been resolved through establishment of appropriate mechanisms and procedures through the Office of Contracts and Grants at both the Office of Education and the University of Colorado.

A secondary problem arose by virtue of the late start-up of this project and other factors. This concerns "savings" incurred in various line items of appropriation (primarily salaries and wages) which provided the illusion that the project was originally overfunded. In actuality, this was not the case, and the aggregate 4% budget increase allocated to accomodate second cycle operations created extreme budget shortfall projections for that year.

Continuation, by the Department of Education, of most first year savings into second year activities has gone far towards offsetting projected shortfalls. This does, however, place the current year's operations upon a "bare bones" footing, curtailing latitude in providing direct service delivery approaches.

Such a situation, ofcourse, bodes ill for third cycle operations when savings are not anticipated as being available from the preceeding year to offset the impact of inflation.

Recommendations

The following are recommendations concerning possible improvements to the SSD Project during the upcoming year of activities:

1) Establishment of a fund, seperate from Department of Education funding designed to offset expenses incurred, but not provided for within the EDGAR context (eg: deductible fees for medical, dental, optical and other similar expenses).

2) Focus upon the academic component(s) as the highest project priority, both in terms of development and execution.

3) Provide clear and contractual definition of dorm counselor duties, roles and expectations.

4) Redesign of "staff counselor" position to allow for a greater latitude of responsiveness to needs evidenced during first year operations.

Conclusion

On balance, it must be asserted that, while all objectives were not satisfied in their entirety, the Science and Self-Determination National Demonstration Project at the University of Colorado/Boulder was markedly successful. Given the late project start-up already noted and the decided complexity of operations represented by the diverse population and geographic area impacted, the project would seem to have exceeded any normative expectations of performance which might be conventionally employed to assess it.

Perhaps the single strongest point to be drawn from a multiplicity of poitive programatic achievements and attributes is that the SSD Project has laid a groundwork for truely exemplary performance over the upcoming two years. This is of critical importance, not only to continuation of the project beyond its initial three-year mandate, but to the potential for actualizing adequate science education among the US American Indian population within the foreseeable future.

APPENDIX I

Science and Self-Determination:
Advisory Board Members

Advisory Board Members

William "Buck" Benham, Jr.
Staff Manager
Mountain Bell Training Center
3898 South Teller Street
Denver, CO 80236
978-6570

Michael Taylor
Educational Opportunity Center of Denver
938 Bannock
Denver, CO 80204
839-2101

Carol Metcalf Gardipe
National Oceanic and Atmospheric Administration
3100 Marine Street
Research Building 3-D621
Boulder, CO 80303
497-6376

Kent Ware
Native American Community Relations
Gulf Oil Corporation
1720 South Belaire
Denver, CO 80222
757-8856

Stephen Manydeeds
Bureau of Indian Affairs
Energy and Minerals
1075 South Yucon
Pinkord Building, Room 101
Lakewood, CO 80226
234-5467 or 234-2588

Robert Whitman
I.B.M.
185 South 42nd Street
Boulder, CO 80303
447-4528

Dr. John C. Twombly
University of Colorado -Boulder
Campus Box 425
Boulder, CO 80309
492-6606

Fernando Blackgoat
Mobil Oil Company
Mining & Oil Division
P. O. Box 1772
Denver, CO 80217
628-6253

Louis Pakiser, Jr.
U.S. Geological Survey
Box 25046, MS 967
Denver Federal Center
Denver, CO 80225
234-2625

Dave Powless
P. O. Box 935
Pueblo, CO 81002
542-0529 or 542-1288

APPENDIX II

Pre/Post-Test Results:
by Student

AI-EOP/Upward Bound

PRE/POST TEST RESULTS

	Student	Reading Pre-Test	Reading Post-Test	Increase-Decrease	Math Pre-Test	Math Post-Test	Increase-Decrease
1.	Abeita	35.00	29.25	- 05.75	16.00	32.00	+ 16.00
2.	Abeita	18.75	17.75	- 01.00	19.00	31.00	+ 12.00
3.	Aguilar	18.00	20.20	+ 02.20	32.00	45.00	+ 13.00
4.	Analla	60.50	62.50	+ 02.00 **	36.00	33.00	- 03.00
5.	Atkins	76.75	62.50	- 14.25 **	90.00	95.00	+ 05.00
6.	Beaver	14.25	16.00	+ 01.75	21.00	21.00	00.00
7.	Begay	47.50	59.75	+ 12.15	46.00	54.00	+ 08.00
8.	Begaye	08.25	16.75	+ 08.50	06.00	13.00	+ 07.00
9.	Bell	19.00	36.75	+ 17.75	13.00	18.00	+ 05.00
10.	Ben	23.75	43.50	+ 19.75	16.00	32.00	+ 16.00
11.	Besselente	12.75	09.50	- 03.25	23.00	16.00	- 07.00
12.	Brave Heart	46.75	79.00	- 32.25	40.00	58.00	+ 18.00
13.	Chapman	88.50	86.50	- 02.00	99.00	89.00	- 10.00
14.	Chinana	06.25	08.75	+ 02.50	03.00	02.00	- 01.00 **
15.	Clair	48.75	46.75	- 02.00	20.00	21.00	+ 01.00
16.	Coggeshell	22.75	28.25	+ 05.50	46.00	47.00	+ 01.00
17.	Coriz	22.25	47.50	+ 25.25	08.00	12.00	+ 04.00
18.	Crawford	38.85	22.00	- 16.75**	16.00	27.00	+ 01.10
19.	Day	72.00	87.25	+ 15.25	32.00	40.00	+ 08.00
20.	Descheenie	27.00	54.50	+ 27.50	11.00	26.00	+ 15.00
21.	Elm	91.75	85.75	- 06.00	73.00	85.00	+ 12.00
22.	Frank	40.25	36.75	- 03.50	28.00	39.00	+ 01.10
23.	Frazier	33.75	25.75	- 08.00	30.00	34.00	+ 04.00
24.	Gatewood	35.75	37.50	- 00.25	56.00	60.00	+ 04.00
25.	Harrison	43.25	46.50	+ 03.25	32.00	53.00	+ 21.00

AI-EOP/Upward Bound

PRE/POST TEST RESULTS

Student	* Reading Pre-Test	* Reading Post-Test	* Increase-Decrease	* Math Pre-Test	* Math Post-Test	* Increase-Decrease
26. Henio	47.75	62.25	+ 14.50	61.00	65.00	+ 04.00
27. House	69.75	80.75	+ 11.00	41.00	65.00	+ 24.00
28. Jacobson	78.25	71.75	- 06.50	77.00	72.00	- 05.00
29. John	23.25	37.50	+ 14.25	25.00	47.00	+ 22.00
30. Kelsey	29.25	28.75	- 00.50	14.00	20.00	+ 06.00
31. Knight	64.75	91.25	+ 26.50	32.00	39.00	+ 07.00
32. Landin	73.00	79.75	+ 06.75	65.00	67.00	+ 02.00
33. Lays Bad	44.00	55.00	+ 11.00	29.00	45.00	+ 16.00
34. Little Bird	64.75	64.25	- 00.50	33.00	-- --	-- -- ***
35. Little White Man	27.50	34.25	+ 06.75	22.00	47.00	+ 25.00
36. Martine	53.25	76.75	+ 23.50	61.00	78.00	+ 17.00
37. Meyers	24.00	25.25	+ 01.25	07.00	37.00	+ 30.00
38. Miller	54.75	50.75	- 04.00	32.00	58.00	+ 26.00
39. Mills	43.75	42.00	- 01.75	25.00	35.00	+ 10.00
40. Quiver	60.00	57.50	- 02.50	19.00	36.00	+ 17.00
41. Saggboy, B.	71.75	75.50	+ 03.75	63.00	53.00	- 10.00
42. Saggboy, M.	42.75	45.75	+ 04.00	98.00	89.00	- 09.00
43. Sanderson	45.50	34.50	- 11.00**	55.00	65.00	+ 10.00
44. Seelatsee	40.25	64.50	+24.25	29.00	49.00	+ 20.00
45. Skeet	53.25	46.00	- 07.25**	58.00	72.00	+ 14.00
46. Stump	74.50	70.75	- 03.75	35.00	42.00	+ 07.00
47. Thompson	73.00	76.00	+ 03.00	56.00	58.00	+ 02.00
48. Three Irons	28.50	33.25	+ 04.75	21.00	28.00	+ 07.00
49. Tohdacheeny	44.25	61.25	+ 17.00	40.00	44.00	+ 04.00
50. Townsend	85.75	84.75	- 01.00	77.00	72.00	- 05.00

AI-EOP/Upward Bound

PRE/POST TEST RESULTS

Student	* Reading Pre-Test	* Reading Post-Test	* Increase-Decrease	* Math Pre-Test	* Math Post-Test	* Increase-Decrease
51. Tsosie, D.	60.00	47.50	- 12.50	86.00	69.00	- 01.70
52. Tsosie, V.	40.75	54.00	+ 13.25	33.00	40.00	+ 07.00
53. Vigil	42.50	59.00	+ 16.50	19.00	42.00	+ 23.00
54. Webster	18.25	59.50	+ 41.25	23.00	49.00	+ 26.00
55. Willie	75.00	72.75	- 02.25**	47.00	74.00	+ 27.00
56. Windy Boy	29.25	33.25	+ 04.00	40.00	40.00	--
57. Yazzie	36.25	42.25	+ 06.00	24.00	35.00	+ 11.00

** Invalid Reading Scores

*** Post-Test Missing

APPENDIX III

Student Mailing List:
1st Cycle

AI-EOP/UPWARD BOUND

Student Mailing List

IGNACIO HIGH SCHOOL

Lorraine Begaye
P.O. Box 104
Shiprock, NM 87420

Verma J. Harrison
P.O. Box 136
Red Valley, AZ 86544

Max Tohdacheeny
Box 1044
Shiprock, NM 87420

Wesley Vigil
Box 106
Ignacio, CO 81137

Carol Yazzie
Box 83
Counselors, NM 87018

LABRE INDIAN HIGH SCHOOL

Elaine Little Bird
P.O. Box 11
Ashland, MT 59003

Valerie Three Irons
Box 254
Crow Agency, MT 59022

LAKELAND UNION HIGH SCHOOL

Lisa Chapman
P.O. Box 321
Lac du Flambeau, WI 54538

Laurie Jacobson
P.O. Box 293
Lac du Flambeau, WI 54538

Buster Landin
P.O Box 273
Lac du Flambeau, WI 54538

Sharon Thompson
Box 223
Lac du Flambeau, WI 54538

LITTLE WOUND HIGH SCHOOL

Arlene Brave Heart
Box 95
Porcupine, SD 57772

LITTLE WOUND HIGH SCHOOL (cont.)

Darrell Lays Bad
Box 145
Porcupine, SD 57772

Lloyd E. Little White Man
Box 3
Kyle, SD 57752

MONTEZUMA-CORTEZ HIGH SCHOOL

Deanne House
General Delivery
Towaoc, CO 81334

Carla L. Knight
General Delivery
Towaoc, CO 81334

Ellen Mills
General Delivery
Towaoc, CO 81334

ONEIDA

Cherrie Elm
510 Adam Drive
West DePere, WI 54115

Jackie Webster
924 Oneida
Oneida, WI 54155

RAMAH/PINE HILL INDIAN SCHOOL

Vera Beaver
P.O. Box 87
Ramah, NM 87321

Rubie K. Frank
P.O. Box 216
Ramah, NM 87321

Lola Henio
P.O. Box 262
Ramah, NM 87321

Marvin H. Kelsey
P.O. Box 73
Ramah, NM 87321

Phoebe Martine
P.O. Box 218
Ramah, NM 87321

ROCK POINT COMMUNITY SCHOOL

Earl Begay
Rock Point Community School
Chinle, AZ 86503

Loraine Coggeshell
Rock Point Community School
Chinle, AZ 86503

Nancy Descheenie
Rock Point Mission
Chinle, AZ 86503

Felisita Gatewood
Rock Point Community School
Chinle, AZ 86503

Elisa John
Rock Point Community School
Chinle, AZ 86503

Brenda Saggboy
Rock Point Community School
Chinle, AZ 86503

Marlin Saggboy
Rock Point Community School
Chinle, AZ 86503

Durby Tsosie
Rock Point Community School
Chinle, AZ 86503

Victor Tsosie
Rock Point Community School
Chinle, AZ 86503

ROCKY BOY TRIBAL HIGH SCHOOL

Duane Meyers
Rocky Boy Route
Box Elder, MT 59521

Dawn Stump
Rocky Boy Route
Box Elder, MT 59521

Wendy Windy Boy
Rocky Boy Route
Box Elder, MT 59521

SANTA FE INDIAN SCHOOL

Elfina Abeita
Box 574
Zuni, NM 87327

Eli Abeita
Box 574
Zuni, NM 87327

Shirley Aguilar
Box 305
Santo Domingo Pueblo, NM 87052

Darreth Ben
Box 2407
Shiprock, NM 87420

Janice Besselente
Box 262
Shiprock, NM 87420

Franklin Chinana
P.O. Box 141
Jemez Pueblo, NM 87024

Charles Coriz
P.O. Box 1253
Pena Blanca, NM 87501

Joseph Quiver
P.O. Box 284
San Felipe, NM 87001

Roy Townsend
P.O. Box 249
San Felipe Pueblo, NM 87001

TOHATCHI HIGH SCHOOL

Monica Analla
Box 98
Tohatchi, NM 87325

Karen Atkins
P.O. Box 263
Gallup, NM 87301

Darlene Crawford
Box 168
Tohatchi, NM 87325

Delphine Sanderson
Box 282
Tohatchi, NM 87325

Genevieve Skeet
Box 31
Mexican Springs, NM 87320

TOHATCHI HIGH SCHOOL (cont.)

Sandra Willie
Box 1128
Tohatchi, NM 87325

WYOMING INDIAN HIGH SCHOOL

Lynette Bell
Box 146
Arapaho, WY 82510

Pat Clair
Box 171
Ft. Washakie, WY 82514

William Day
Box 343
Ft. Washakie, WY 82514

Robbie Frazier
Box 143
Ethete, WY 82520

YAKIMA TRIBAL HIGH SCHOOL

Sam Miller
424 Larena Lane
Wapato, WA 98951

Gladys Seelatsee
612 Larena Lane
Wapato, WA 98951